

Composite NDE for the Space Shuttle and Station

I. Objectives Develop NDE capabilities necessary to safely process Space Shuttle and Station (and the ELV), especially with bonded assemblies.

II. Center Point of Contact

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III Technical Methodology/Approach:

1. Develop operational NDE tools
 - 1.1. Respond to urgent operational needs as soon as they arise.
 - 1.1.1. Flight Crew Systems
 - 1.1.2. Spray-on Foam Insulation (SOFI) for External Tank and EELV (Delta IV) Program
 - 1.2. Develop capability to inspect bonded structure first.
 - 1.2.1. Identify material types and geometry. Determine defect types.
 - 1.3. Investigate areas for method improvement and enhancement for new techniques.
 - 1.4. Write techniques and procedures
 - 1.5. Develop training and certification (mostly non-Code 323-78 funds)
 - 1.6. Develop Core Capability for Shuttle, Station, and ELV Programs concurrent with KSC goals
 - 1.6.1. Implementation Plan
 - 1.6.2. Follow-on Development Plan
 - 1.6.3. KSC Strategic Implementation Plan for NDE

IV Customers

Space Shuttle and Space Station are primary customers and by common application, the EELV (Delta IV).

V Metrics

1. Resolution of urgent operational problems.
2. Implementation of certified techniques and operators.
3. Customer and peer feedback

VI Products

Techniques which document specific inspections. Method improvements. Test and Implementation Plans.

VII. Schedule/Milestones

FY01:

- FCS Pallet Inspection results leading to Program inspection requirements. Develop Implementation plan. Brief management, design centers, and contractors. Plan follow-on lightweight component inspections.
- ET SOFI test plan results, especially sensitivity and resolution. Perform field testing on ET in the VAB. Develop Implementation plan. Brief management, design centers, and contractors.
- Preliminary results on Thermography resolution and sensitivity determination.

FY 02

- Implement NDE techniques for FCS pallets and ET SOFI
- Create NDE system engineering for Shuttle program and core capability for KSC
- Create development plan for follow-on program development.